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**PROTECTIVE DIVIDER AND ENCLOSURE DISC ASSEMBLY
FOR LASER DISCS AND LASER DISC DRIVES.**

BACKGROUND OF THE INVENTION

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There is an urgent need for separating and protecting laser discs from contacting each other and thereby scratching the recorded or blank audio and optical portions of a laser disc. There is no other protective disc in the prior art that meets this need. All laser disc care products in the prior art depend on polyester, rayon and nylon spunbound materials. Polyester and rayon fabric was first used in computer floppy disc envelopes as ~~sighted~~ noted in U.S. Patents: 4,586,606 and 4,413,298. ~~The research and development of these fabric materials is intended~~ These fabric materials are intended for magnetic computer diskettes. In U.S. Patent: 5,588,527 for CD storage, polyester fabric material is considered softer than cellulosic fibers such as cotton fabric material. The track welded or bonded Polyester and rayon of the prior art are abrasive to CD'S. The polyester, fabric is- rayon and nylon spunbound backings tack welded or bonded are not soft in equal directions. U.S. Patents: 4,850,731, 4,610,352 and 5,462,160 continue the use of polyester, polycaprolatam and Nylon with Rayon cellulose.

U.S. Patent: 4,610,352 realized cellulosic fibers compressed and thermally bonded together in a plurality of recessed discrete bonding points. Comprised of a preferred Nylon ® 6 polycaprolactam fiber with a preferred Rayon ® cellulosic fiber.

U.S. Patent: 4,520,470 is a rotating laser disc cleaning device. This cleaning device uses natural or synthetic cleaning material, e.g., velvet, cotton or a brush. Velvet, ~~cotton~~ and a brush all have a ~~very different~~ damaging effect on the surface of a laser disc. Respectfully, after years of research with materials in this field of study, the applicant first started his work on U.S. Patent: 3,854,729 The Record Divider and Preservative. ~~At the time of his research with various protective materials Pellon ® was studied and was decided that it was not right for a vinyl application.~~ When laser discs were first introduced they were made of Du Pont Mylar ® and scratches would not effect them. ~~Then when CD'S were released, G.E., Lexan ® was being used and sratches did effect them.~~ Now CD'S and DVD'S are being made of G.E., Lexan ® and some scratches can destroy a CD and DVD. The applicant of this invention has researched many fabrics to find strong material properties to be soft on CD'S and DVD'S.

The cotton protective disc of this invention is all that is needed for the protection of CD'S outside of a laser disc drive. With five pounds of pressure from polyester on a CD the CD will scratch. With five pounds of pressure from compressed, Pellon ® cotton fabric material from .005 to .010 inches (5 to 10 mils) a CD will not be scratched. Thinner Pellon ® cotton fabric material will remain limp and will scratch CD'S. Paper, velvet, rubber, polycarbonates and of course a brush will all scratch CD'S. A very strong course of study into the precise use of material for this application first began with the awareness of debris that could develop from the use of certain materials to protect a particular vinyl, magnetic or CD surface along with the disc drive. For many people working in this study of the prior art, polyester material was found to be the best.. In the applicants first studies with Pellon ® cotton material for use on the vinyl phonograph record, the Pellon ® fabric material was still in a very thin state and produced debris, surface scratches and required a backing sheet to be adhered to a protective disc. Now Pellon ® cotton material in it's thickest stock is perfect for the application of protecting CD'S and vinyl records without any problem of debris. The spun bound backing material in the prior art is not soft in equal directions. The tack welded or bonded tear away and cut away backing material used in the prior art scratch CD'S and DVD'S.

The Ahlstrom Windsor Locks LLC, Totally Stable ® 2095 material used in the applicant's invention is comprised of: wet laid, water based processed, non-woven, cut away backing, having a thickness of between 20 to 40 mils, .020 to .040 inches., 85% acrylic latex polyester and 15% cellulose wood pulp, weighing 3.0 ounces. This Totally Stable ® 2095 material remains flat and soft in equal directions. The Totally Stable ® 2095 fabric used in the applicant's invention will not scratch a CD or DVD under 10 pound of pressure. The welded or bonded edges of the backing material used in the prior art scratch CD'S and DVD'S. The edge and the surface of the Totally Stable ® material used in the applicant's invention will not scratch CD'S and DVD'S. The Totally Stable ® 2095 backing material is resilient. This material will return to its original shape after being compressed. The compression of the tear away backing material of the prior art will leave permanent crease marks.

U.S. Patent: 5,538,774 is a rotating storage article that allows data to be stored on the article to allow reading or writing of information from the article. Many combinations of vibration damping materials are used.

U.S. Patent: 6,186,320 B1 is a double-sided storage sleeve for holding CD'S and DVD'S in a pocket. Comprised of Veralco ® Polypropylene in layers, tack welded or bonded together. This double-sided storage sleeve comprises a plurality of apertures positioned for removable interconnection to a notebook binder. This patent is not a protective disc. The double-sided sleeve can not be placed between CD'S and DVD'S inside or outside of a case. The edges of the backing material used in the prior art are tack welded or bonded. This tack welded or bonded area scratches CD'S and DVD'S and can not be used as a wipe to clean a CD or DVD. The over all shape of the double-sided sleeve is rectangular or square in a fixed position. The 2095 Totally Stable ® material used in the applicant's invention is soft enough to wipe CD'S and DVD'S. The protective disc of the applicant's invention has a center aperture allowing the protective disc to adapt to CD'S and DVD'S inside and outside of any case.

As will be seen from the foregoing drawings and description, the applicant's invention comprises a disc of ~~cotton material~~ Totally Stable ® 2095 wet laid, water based processed, non-woven, cut away backing, having a thickness of between 20 to 40 mils., .020 to .040 inches, 85% acrylic latex polyester and 15% cellulose wood pulp material, weighing 3.0 ounces, intended for separating laser discs outside and inside of laser disc cases, spindle containers, storage files and carrying cases.

The known prior art relating to protective discs for laser discs includes the following U.S. Patents: 4,413,298; 5,588,527; 4,850,731; 5,462,160; 4,610,352; 4,520,470; 3,854,729; 4,586,606; 4,276,636; ~~1,683,440 and 4,316,281.~~ 1,683,440; 4,316,281; 6,186,320B; 5,538,774; and 4,610,352.

SUMMARY OF THE INVENTION

The invention comprises a fabric disc inserted between laser discs. The disc is placed between laser discs to prevent the discs from contacting each other; said disc is composed of 2095 Totally Stable ® 85% latex polyester and 15% cellulose wood pulp, wet laid, water based processed, non-woven, cut away backing material, weighing 3.0 ounces 24 having a thickness of approximately .020 to .040 inches, 20 to 40 mils. The disc, designated by reference numeral 40, comprises a center aperture 32 equal in size to the aperture of a laser disc.

As will be seen, this invention also includes a laser disc enclosure represented by reference numeral 50. Disc 50 has a outside peripheral edge 54 and a inside peripheral edge 55 to fit around the outer edge of a laser disc. Disc 50 has a center aperture 61 measuring larger than the aperture of a laser disc. Enclosure disc cover 60 has a center aperture 72 measuring larger than the aperture of a laser disc. A laser disc is placed inside disc 50 and the enclosure disc cover 60 is placed on top of the laser disc fitting in a tight relationship. Enclosure disc cover 60 fits under the outer beveled edge 55 in a close juxtaposition relationship enclosing the laser disc inside a protective enclosure. The enclosure disc and cover are releasably or permanently attached.

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As will be seen, this invention also includes a clear plastic enclosure disc represented by reference numeral 50. Disc 50 has a outside peripheral edge 54 and a inside peripheral edge 55 to fit around the outer edge of a laser disc. Disc 50 has a center aperture 61 measuring larger than the aperture of a laser disc. Enclosure disc cover 60 has a center aperture 72 measuring larger than the aperture of a laser disc. A laser disc is placed inside disc 50 and the enclosure disc cover 60 is placed on top of the laser disc fitting in a tight relationship. Enclosure disc cover 60 fits under the outer beveled edge 55 in a close juxtaposition relationship enclosing the laser disc inside a protective enclosure. The enclosure disc and cover are releasable or permanently attached.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a plan view of the protective disc.

Figure 2 is a top plan view of the enclosure disc.

Figure 3 is a plan view of the enclosure disc cover.

Figure 4 is a top fragmented view of the enclosure disc showing a laser disc enclosed inside the enclosure disc and cover.

Figure 5 is a cross-sectional view taken on line 7-7 of Figure 4 showing the enclosure disc on the bottom, a laser disc in the middle and the enclosure disc cover on top

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings in this case and particularly to Figure 1, it may be seen that the invention includes a substantially circular or annular fabric disc generally designated by reference numeral 40. Disc 40 is adapted for use as a protective disc placed between laser discs outside of a laser disc drive. Disc 40 is placed between laser discs outside or inside laser disc cases, spindle containers, storage files and carrying cases. The fabric disc thus prevents the laser discs from contacting each other, thereby protecting the laser discs from scratching and damaging the blank or recorded surfaces.

The fabric disc in its preferred embodiment is seen in Figure 1, where in disc 40 comprises sheet stock of Totally Stable® 2095 material 24 having a thickness approximately in the range of .020 to .040 inches 20 to 40 mils. of wet laid, water based processed, non-woven, cut away backing, 85% acrylic latex polyester and 15% cellulose wood pulp, weighing 3.0 ounces. As seen in the preferred embodiment, disc 40 has a diameter substantially similar to the diameter of a laser disc. Disc 40 has a center aperture 32 substantially similar to the diameter of a laser disc.

Referring to Figure 2, it may be seen that the enclosure disc designated by reference numeral 50, comprises a substantially circular or annular disc, having a centrally located hole or aperture 61. Said aperture 61 is larger than the aperture of a laser disc. Said aperture 61 is larger than the aperture of a laser disc to avoid any interference with the laser disc drive.

The enclosure disc 50 comprises a body portion 52 made of clear plastic Du Pont, Mylar ® or General Electric, Lexan ® material with outer peripheral edge 54 and inner peripheral edge 55 to hold the laser disc. As shown in Figure 3, the enclosure disc cover designated by reference numeral 60 comprises a centrally located aperture 72 larger than the aperture of a laser disc to avoid any interference with a laser disc drive. Disc 60 comprises a body portion 62 made of clear plastic Du Pont, Mylar ® or General Electric, Lexan ® material and a outer peripheral edge 64 substantially similar to the diameter of a laser disc. As shown in Figure 4, enclosure disc 50 is holding laser disc 90 in a tight, abutting, relationship. The outer peripheral beveled edge 55 of disc 50 fits around the outer peripheral edge 98 of laser disc 90. Enclosure disc cover 60 is placed on top of laser disc 90. The center aperture 91 of laser disc 90 and the center aperture 61 of enclosure disc 50 and the center aperture 72 of the enclosure disc cover 60 have the same central axis and in effect form three concentric circles.

Aperture 61 of enclosure disc 50 and aperture 72 of enclosure disc cover 60 have the same diameter larger than center aperture 91 of laser disc 90. Enclosure disc cover 60 extends radially outward from center aperture 72 to the outermost peripheral edge 64. The outer peripheral edge 64 of the enclosure disc cover 60 fits over the outer peripheral edge 98 of laser disc 90 and under the peripheral beveled edge 55 of enclosure disc 50 enclosing the laser disc in a releasable or permanent protective enclosure. As shown in Figure 5, laser disc 90 is enclosed by enclosure disc 50 and enclosure disc cover 60. Enclosure disc area 52 extends radially outward from the center aperture 61 to the outer peripheral beveled edge 55. The center aperture 61 of enclosure disc 50 is larger than laser disc center aperture 91. Enclosure disc aperture 61 measures approximately 1-½ inches in diameter. The center aperture 72 of enclosure disc cover 60 is larger than laser disc center aperture 91. Enclosure disc cover aperture measures approximately 1 ½ inches in diameter. The outer peripheral edge 54 and the beveled edge 55 fits around the outer peripheral edge 98 of a laser disc. The outer peripheral edge 64 of enclosure disc cover 60 extends over the outer peripheral edge 98 of the laser disc and fits under the peripheral beveled edge 55 of enclosure disc 50. The clear plastic Mylar ® or Lexan ® material of enclosure disc 50 and enclosure disc cover 60 envelopes the laser disc in a protective enclosure.